

The Regenstrief Medical Record System 1997

A System for Clinical Pervasive and City-wide Computing

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The Regenstrief Medical Record System (RMRS) operates on Digital Alpha linked to a PC network. It is used at Clarian-IU/Riley and Wishard Hospitals and linked to three other hospitals, 13 homeless centers, and 44 clinics/offices in Indianapolis. It is also used at three US military base hospitals and a number of sites supported by Shared Medical Systems. At Clarian and Wishard it carries over 110 million coded observations, 1.2 million text reports, and seven million prescriptions for 1.3 million distinct patients, and is used by more than 2000 providers at the medical center.

At Wishard Hospital and clinics, RMRS captures almost every kind of data to some degree. It captures all institutional dictation (e.g., admission H&Ps, discharge summaries, operative notes, radiology and nuclear medicine reports, and surgical pathology reports) as free text. It also captures most diagnostic studies (including OB ultrasound, cardiac echoes, reports of endoscopy/colonoscopy clinical laboratory, pathology, electrophysiology, results, as well as records of all medication (records) encounters, billing diagnoses and problem lists in a coded and computer retrievable format. Nurses and physicians enter much of their information, including orders, allergies, problems, consultation requests, and disposition information directly into the computer through a PC workstation. This is true on all inpatient services, in the emergency department, and at many outpatient and office sites. We are also linked to a large Indianapolis pharmacy chain and have commitments from all the major Indianapolis hospitals to join the network and to share their laboratory and visit data with ED physicians when a patient is under active care in the ED.

The workstation provides for easy physician entry of orders, problems, allergies, patient status, disposition information, and visit notes. It is used by all inpatient physicians from all services to enter orders, problems and allergies, to produce various

management reports, to search Medline and a full text knowledge source containing 12 years of the three major journals and the Year Book of Medicine. Physicians use the same workstation to write prescriptions, problems, follow-up information, consults patient instructions and special letters of various kinds, for all emergency department, medicine clinic and dermatology clinic visits. Medicine physicians also type in their full hospital discharge note and many physicians record their hospital and office visit notes in the computer. The computer applies the individual physician's signature graphically to the prescription and notes to reflect the physician's electronic signature with which the report was signed. Nurses use it for verbal orders, Kardex production, admission assessments, requisition generation, patient transport and email communication. Automated rules and guidelines can be executed at any point in the work flow, and can produce reminders, pre-canned orders, tailored menus and tailoring of printed reports.

We capture, or provide access to, graphical reports (EKG tracings) and radiologic images.

All of this patient information is accessible for patient care (one patient at a time) via Web browser, over a private network. We use SSL for encryption on the wire. Individual passwords, a "need to know" strategy, access logging and administrative sanctions and are planning for electronic signatures to provide user level security.

The medical record is highly coded and indexed; so researchers and managers with the proper authority can in seconds search the medical records system, using criteria the identify of a variable, its date and numeric or coded value.

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